## Space Weather Forecast

Issued on Thursday 20 March 2025 at 01:01 Local

**This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

---

**Space Weather Forecast Headline: Chance of Moderate class flares. Chance of G1-G2/Minor-Moderate Storms Days 1-3 (20-22 March) due to coronal mass ejection arrivals.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Moderate, with one Moderate-class flare observed at 19/2040 UTC from a sunspot region in the northwest. There are currently eleven sunspot regions on the visible disc. Two regions, one in the northwest and the other near centre disc, are the two largest and more magnetically complex regions on the disc. Both have seen some growth of trailer and intermediate spots. None of the remaining spots are showing any significant magnetic complexity, and are relatively small or appear to be stable.

A filament eruption (arc of plasma) from the north-centre disc was observed around 19/0034 UTC, which produced a coronal mass ejection (CME). This has been analysed and the results show a potential glancing blow on Day 3 (22 Mar).

No other Earth-directed CMEs were observed.

**Solar Wind / Geomagnetic Activity:** Solar winds were at slightly elevated levels, ranging between 440 to 520km/s, possibly due to the passing of a weak CME, or lingering effects of a coronal hole fast wind. The magnetic field was weak to moderate, with the north-south component also weak to moderate, favouring a negative (southward) orientation. Geomagnetic activity was Quiet to Active (Kp2-4).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Low to Moderate activity is expected, with an ongoing chance of isolated Moderate flares.

**Solar Wind / Geomagnetic Activity:** There are four CMEs which feature in the forecast in the coming days (20-22 Mar). Solar winds are likely to remain mostly at slow to slightly elevated levels, with elevated enhancements possible due to forecast CME arrivals. Quiet to Active activity expected initially, with a chance of G1-G2/Minor-Moderate storms Days 1-3 (20-22 Mar) should any

---

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.

of the four possible CMEs arrive and/or combine. A further enhancement is possible on Day 4 (23 Mar) due to a fast wind from a coronal hole, which is currently near the centre-disc.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is expected to persist at background levels, with a slight chance of enhancement from any larger flares.

## Geomagnetic Storms

| Geomagnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 30 | 30 | 40 | 20 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

## Radio Blackouts - X-Ray Flares

| X-Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 (M Class) | Yes | 40 | 40 | 40 | 40 |
| Very Active | R3-R5 (X Class) | No | 5 | 5 | 5 | 5 |

## Solar Radiation Storms (High Energy Protons)

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}sr^{-1}s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 5 | 5 | 5 | 5 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2025. All Rights Reserved.